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DEPARTMENT OF CONSERVATION
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ME

November 13, 1984

Melvyn J. Weiss, Field Representative
Forest Pest Management
USDA - Forest Service
Northeastern Forest Experiment Station
Box 640
Durham, New Hampshire 03824

Dear Mel:

We have pulled together the enclosed summary of pest conditions in Maine for the 1984 season as you requested. We have not included the gypsy moth and spruce budworm maps which you should already have. Our pest problems have kept us fairly busy. Although the gypsy moth and forest tent caterpillar declined in severity over the period, evaluating the impact of the recent outbreaks has required additional effort.

For most of the major problems for 1984 we have provided summaries in the form which you requested. Each year, however, there are other more chronic problems which we feel also deserve a mention to insure continuity. These we have simply summarized under miscellaneous insect and disease conditions. Should you desire publications listings for the period we could also supply this as well.

I hope that you find the enclosed information useful in compiling your report. If you have further questions, please feel free to contact me at any time. Sorry for the delay.

Sincerely,

Clark

Clark A. Granger
State Entomologist

CAG/jlc
enclosures

Miscellaneous Insect Condition Summaries for Maine for the 1984 Season

Alder Flea Beetle, Altica ambiens - Alder throughout much of the southern half of the State at least was browned up in 1984 by the feeding of larvae of this species. Many who normally care little about alder became concerned. The shiny blue and green beetles were abundant everywhere late in the season and can be expected again in the spring in these areas.

Arbovitae Leaf Miner, 4 species - Populations and damage from these insects in 1984 remained fairly constant with 1983 levels.

Balsam Gall Midge, Paradiplosis tumifex - This problem in Christmas tree plantations continued to be spotty. While locally heavy in some plantations it was nearly absent from others. in general the problem was down somewhat from 1983 levels.

Balsam Twig Aphid, Mindarus abietinus - This insect seemed to occur somewhat more frequently than in 1983 for natural stands but was still spotty in nature and seemed to be down somewhat in plantations.

Birch Leafminer (several species) - For about the fourth year, leafminer populations remained at relatively low levels during 1984. There did seem to be a slight rise in populations and damage from the white birch species Messa nana and Profenusa thomsoni. Scattered areas of defoliation were noted and mapped during the gypsy moth aerial survey.

Birch dieback - mortality - Investigations of birch cutting operations and observations recorded during the birch casebearer survey indicate no evidence of any general increase in birch dieback beyond that noted in specific locations in eastern Maine during 1983. All dieback and mortality encountered appears to be the result defoliators (eg. forest tent caterpillar, birch casebearer) in conjunction with slow-growing, stressed trees.

Browntail Moth, Euproctis chrysorrhaea - Surveys were conducted for overwintering webs of the browntail moth caterpillars during the Fall, 1983 and Spring, 1984. All known infestations, and several suspect areas, were scouted. Results are shown below:

Location	Fall 83	Spring 84
Vaill Island	1768	383
House Island	-	362
Seguin Island	-	1
Long Island	-	0
Harpswell (coastal mainland)	-	0

Fall Cankerworm, Alsophila pometaria - Populations of this insect remained fairly constant in 1984 except for some local hot spots along the coast. It may have "bottomed out" so we will be watching for a possible rise in 1985 or 1986.

Fall Webworm, Hyphantria cunea - Although present in low numbers throughout southern Maine in 1984, defoliation by this pest was again barely detectable. A slight rise in populations did seem evident in some areas of southern Maine; however, and may be on the upswing.

Fir Problems - For a number of years now we have been receiving questions and comments concerning the cause and seriousness of the so-called "red fir" of the spruce-fir region. These "red" trees show up strikingly and quickly in July and August by Fall the trees enter the dead category. Those investigating the problem seemed to come up with a variety of "causes" often with little consistency. Asked to respond to a requests for specific information on such scattered trees on land northwest of Moosehead Lake (T4 R17 &R18) we set up several study areas. In these areas the extent of "red fir" and condition of selected trees was recorded. Although specifics are not yet available several statements can be made:

1. Many of the mature fir in the area suffered a setback between 6 and 10 years ago from which even some of the green ones have not recovered. This setback was coincident with seven budworm feeding.

2. Over 75% of the "red fir" showed signs of Armillaria root rot. Mycelial fans were just becoming evident in the root-bole junction in most cases.

3. Bark beetle populations did not seem to be consistent or old enough to be considered a primal cause.

From what we have seen so far it appears that we are experiencing a stressed tree situation and can expect to see more red fir in the future until the next generation trees arise.

Hemlock Needle Miner, Pulicalvaria abietisella - Mining of hemlock by this species seemed to be up slightly in 1984 and damage ranged from light to moderate in many areas.

Larch Casebearer, Coleophora laricella - Populations of this insect seemed to be up somewhat in 1984 from 1983 levels.

Larch Insects - While larch decline will be discussed elsewhere it might be desirable to point up that a number of unusual (for us) and interesting insects showed up in our intensified larch surveys in 1984,. Aside from the increased numbers of eastern larch bark beetle, Dendroctonus simplex, associated with the decline conditions we also obtained records this season for: a plant bug, Deraeocaris lariciatus; larch looper, Semiothisa sexmaculata; and aphids, Chermes strobilobius and C. lariciatus. While none of these "secondary" insects were abundant enough to be serious, they certainly could add to the woes of larch from other causes.

Larch Sawfly, Pristiphora erichsonii - The larch sawfly continues to remain very low in numbers statewide.

Oak Insects seemed to be less of a problem in 1984 than the foliage diseases. We did however have the usual collections of rollers and tiers although damage and abundance seemed to be down from 1983 levels. We did note a slightly higher number of sawflies in the genus Periclista and received reports of the interesting leaf rolling weevil, Attelabus bipustulatus.

Orange Spruce Needleminer, Pulicalvaria piceaella - Orange Spruce Needleminer has been very common on budworm samples for the past 2 years. Many sample areas in southeastern Maine had as many needleminers as budworm. Spotty damage to white and red spruce was caused by this insect throughout the budworm survey area.

Oystershell Scale, Lepidosaphes ulmi - Population levels appear to be increased generally throughout the central hardwood area of the state. Heavy population of this insect caused complete defoliation of understory and lower canopy beech in localized 1-5 acre patches in Old Town and T5 R9 NWP.

Poplar Insects - Now that poplar seems to be receiving a slight respite from the onslaught of the forest tent caterpillar it appears that a number of other insects are jumping on the "bandwagon." Throughout the season we noted increased populations of a number of other insects although not at significant enough numbers to cause serious damage. We received collections of defoliators such as Orthosia hibisci, Itame loricaria and the leaf beetle Chrysomela crotchi. The leaf rollers and tiers made up the most common

element and included Anacampsis innocuella, Xylomyges dolosa, Sciaphila duplex, Epinotia solandriana, Enargia decolor and Choristoneura conflictana. The serpentine leaf miner Phyllocnistis populiella, was also common again in 1984.

Saddled Prominent Complex, Heterocampa spp. - Populations have subsided to endemic levels in previously infested areas. No new areas of defoliation by this insect were found.

White Pine Weevil, Pissodes strobi - A general survey was begun in 1984 in an attempt to measure annual population fluctuations. A series of 33 white pine sample sites were selected throughout the southern half of the State. Most were plantations although some natural stands were selected if no plantations were present. The number of trees (out of 50) showing current weevilling was recorded. The results were clumped by rough geographic region and were as follows:

Area	Ave. No. Weevilled/ 50 trees (Range)	%Weevilled
SW*	10 (3-28)	20%
WC**	6.4 (1-15)	13%
E***	6 (1-20)	12%
Average	7.5	15%

*SW - South West - That area south of rte. 2 from Bangor to Gilead and west of the Penobscot River.

**WC - West Central - North of rte. 2 from Bangor to Gilead and west of the Penobscot River.

***E - East - East of the Penobscot River and south of rte. 9 from Bangor to Calais.

These figures seem to reflect average conditions except in the SW zone where weevilling seemed to be on the high side. It is hoped that another season will provide a better basis for comparison. This is still a major resource problem.

Yellow-headed Spruce Sawfly, Pikonema alaskensis - Populations of this species seemed to drop again in 1984 with no reports received of damage.

1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Budworm

(SPECIFIC NAME): Choristoneura fumiferana

HOST: Balsam Fir, White, Red and Black Spruce, Hemlock

PRESENT CONDITION:

AREA (TOTAL ACRES): 5.5 million acres

LOCATION: Entire spruce-fir type in the northern 2/3 of Maine.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

1.3 million acre moderate (30 to 50%).
.6 million acre heavy to severe (51% +)

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): 300,000 acres of 100+ acre patches of fir mortality (greater than 50% dead) scattered mortality (< 10%) on additional 700,000 acres.

TREND:

PAST TO PRESENT: Populations and damage were down in 1984 from very high levels in 1983.

FUTURE: 1984 surveys predict a significant decline in the area expected to have moderate to high populations.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

A control program of from 250,000 to 500,000 acres is expected in 1985 using Bt and chemical insecticides. A total of 668,000 acres were treated in 1984 with Dipel 8L and Zectran in 1984. Results with all materials were excellent.

COMMENTS:

1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Satin Moth

(SPECIFIC NAME): Leucoma salicis

HOST: Primarily poplar

PRESENT CONDITION:

AREA (TOTAL ACRES): 1258 Acres

LOCATION: Coastal Washington County in Jonesboro - Whitneyville

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

1126 A: 30-60% defoliation
132 A: > 60% defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): No specific survey conducted. Twig and branch mortality common in areas of defoliated Big toothed Aspen-less noticeable in Trembling Aspen.

TREND:

PAST TO PRESENT: Population subsiding. Residual defoliation is in areas not noticeably defoliated in 1983.

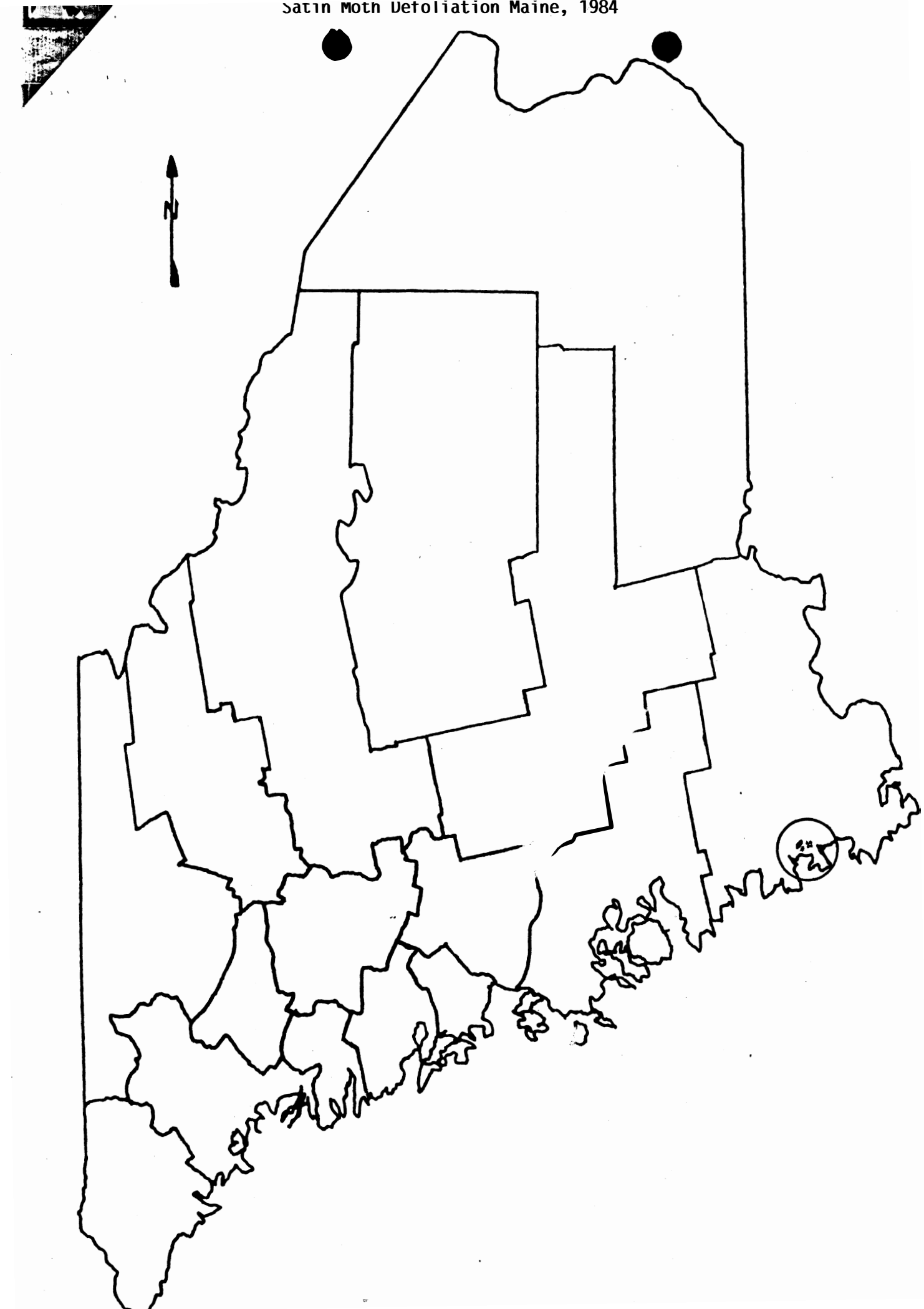
FUTURE: Continued subsidence in currently infested areas. Possible new areas of defoliation in adjacent areas.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

None conducted or contemplated

COMMENTS: Glyptapanteles flavicoxis released in these stands during 1984 to evaluate S.M. as a possible overwintering host for this potential Gypsy Moth parasite.

Satin Moth Defoliation Maine, 1984



1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Larch Decline/Bark Beetle

(SPECIFIC NAME): Dendroctonus simplex + Unknown predisposing factor(s)

HOST: Tamarack

PRESENT CONDITION:

AREA (TOTAL ACRES): Areas of unexplained mortality scattered throughout S 2/3 of state

LOCATION: Southern 2/3 of Maine

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Varies with area from 10-20% to 90-100% larch mortality within individual stands

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES):

Not yet determined

TREND:

PAST TO PRESENT: Appears to be increasing

FUTURE: Unknown

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

COMMENTS: Attack by D. simplex seems to be the final causal factor. Predisposing factors have not yet been identified, but reduced radial growth often preceeds attack. Permanent study plots in W., E., & S. areas of the state are being established and monitored.

1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Birch casebearer

(SPECIFIC NAME): Coleophora serratella

HOST: Primarily white birch

PRESENT CONDITION:

AREA (TOTAL ACRES): Endemic throughout birch stands in the Northern 2/3 of state.

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Less than 10% of plots had defoliation above 25% (all less than 50%).

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES):

TREND:

PAST TO PRESENT: Defoliation reduced to < 25% over most of the area. Down from 193,000 acres of H in 1983.

FUTURE: Unknown - overwinter casebearer populations to be collected and analyzed.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None conducted or planned.

Based on 66 plots in 57 twps.

COMMENTS: Certain of the survey plots showing twig and branch mortality. This damage appears to be related to over maturity/site stress.

1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Forest Tent Caterpillar

(SPECIFIC NAME): Malacosoma disstria

HOST: Primarily poplar, oak, maple, beech & birch also defoliated.

PRESENT CONDITION:

AREA (TOTAL ACRES): No known areas of moderate-heavy defoliation. Minor component with other species in S E Aroostook.

LOCATION:

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Areas previously supporting moderate-heavy populations have collapsed. No new areas of moderate-heavy were located.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): Presently collecting data on crown condition, stem cankers, and tree mortality.

TREND:

PAST TO PRESENT: Populations have subsided. Light trap catches have declined 87% from last year with 1/3 of the residual catch coming from a single trap in extreme SW Maine (outside the defoliationa rea).

FUTURE: Expect static endemic populations for the immediate future.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): None

COMMENTS:

1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Spruce Coneworm

(SPECIFIC NAME): Dioryctria reniculelloides

HOST: Red & Black Spruce

PRESENT CONDITION: Found generally throughout the portion of Maine infested with spruce budworm.

AREA (TOTAL ACRES): 5.5 million acres

LOCATION: Entire northern 2/3 of Maine but most significant in the northwest 1/4. (see spruce budworm map)

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

Moderate to Heavy defoliation (greater than 30% defoliation) on approximately 200,000 acres.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES):

Damage too closely associated with spruce budworm to separate damage.

TREND:

PAST TO PRESENT:

FUTURE: Counts of overwintering larvae in 1984 showed a population decline in the northwest and similar populations levels in the remainder of infestation.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Areas treated for budworm in 1985 will certainly contain populations of Dioryctria.

COMMENTS: Efforts to improve survey methods are planned for the coming year.

1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Bruce spanworm

(SPECIFIC NAME): Operophtera bruceata

HOST: Primarily maple and beech. Poplar heavily defoliated in spots.

PRESENT CONDITION:

AREA (TOTAL ACRES): 214,523

LOCATION: Majority of defoliation in Allagash - St. John River areas. Scattered areas of moderate defoliation in Central Aroostook. Light defol. in S. Aroostook.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES):

122,000 A: < less than 30% defoliation
93,000 A: > 30% defoliation

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES):

None noted - no specific measurements taken

TREND:

PAST TO PRESENT: Acreage down 36% from '83 to '84; intensity decreasing. Contiguous areas of defoliation in NW disintigrating into residual spots - shifting to south and east.

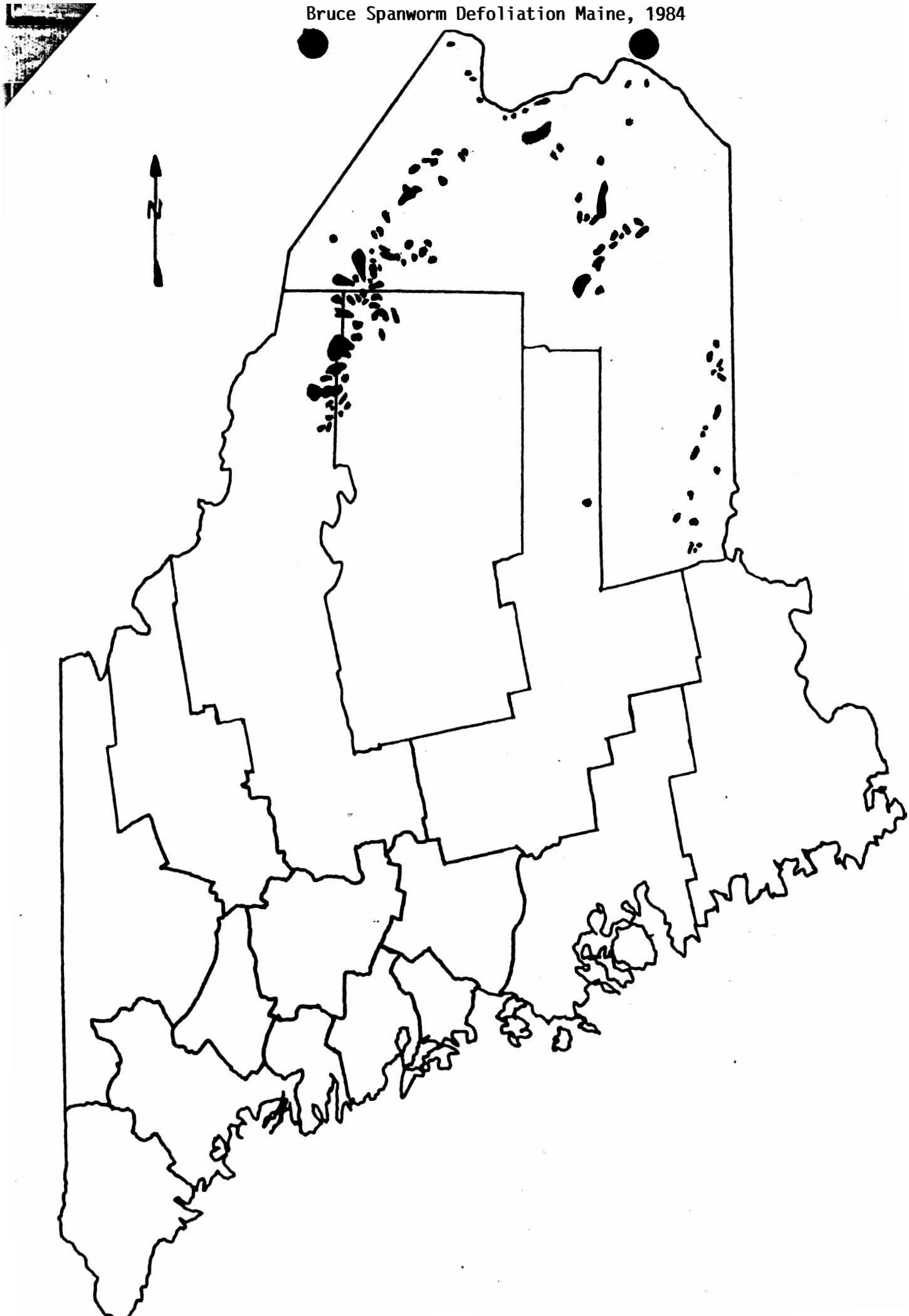
FUTURE: Continued shifting and decline in acreage intensity.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

None conducted or planned.

COMMENTS: Previous outbreaks have subsided after 1-2 years in any specific area without measurable damage. Possible synergistic effect if it infests poplar defoliated previously by FTC.

Bruce Spanworm Defoliation Maine, 1984



1984 PEST CONDITIONS REPORT WORK SHEET

PEST (COMMON NAME): Gypsy Moth

(SPECIFIC NAME): Lymantria dispar

HOST: R. Oak, Poplar, Gray Birch

PRESENT CONDITION:

AREA (TOTAL ACRES): 5778

LOCATION: Majority in Penobscot River Valley (Howland area) & scattered locations in S. Maine.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): 1982 acres > 30%, majority in Central Penobscot Valley; 3686 acres < 30% defoliation.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): MFS Entomology Division personnel are presently surveying and evaluating tree vigor and mortality following various levels of cummulative heavy defoliation. Preliminary data indicate that 2 years of following ceasation of heavy defoliation the following percentage of the total basal area has died:

TREND:

	# yr. H defol.				
	0 yr.	1 yr.	2 yr.	3 yr.	4 yr.
% basal area dead	1.39	3.24	14.23	12.25	14.13

PAST TO PRESENT: Area of defoliation declining drastically. Male moth population appears to be increasing in locations at edge of infested area. Indicate possible expansion of infested area.

FUTURE: Continued expansion of low level infestation. Defoliation decreasing.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS):

None conducted or contemplated.

COMMENTS:

1984 PEST CONDITIONS REPORT WORK SHEET (MAINE)

PEST (COMMON NAME): Scleroderris Canker

(SPECIFIC NAME): *Gremmeniella abietina*

HOST: Red Pine (Norway Pine)

PRESENT CONDITION:

AREA (TOTAL ACRES): 40+

LOCATION: T19 MD (Washington Co.), Aurora (Hancock Co.), Coplin Plt. and Eustis (Franklin Co.).

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Since areas have been sanitized, new infection is light; i.e., isolated "flags."

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): None to date

TREND:

PAST TO PRESENT: No new infection sites since 1982. The 4 previously-infected sites have been re-sanitized, with only minor pruning required.

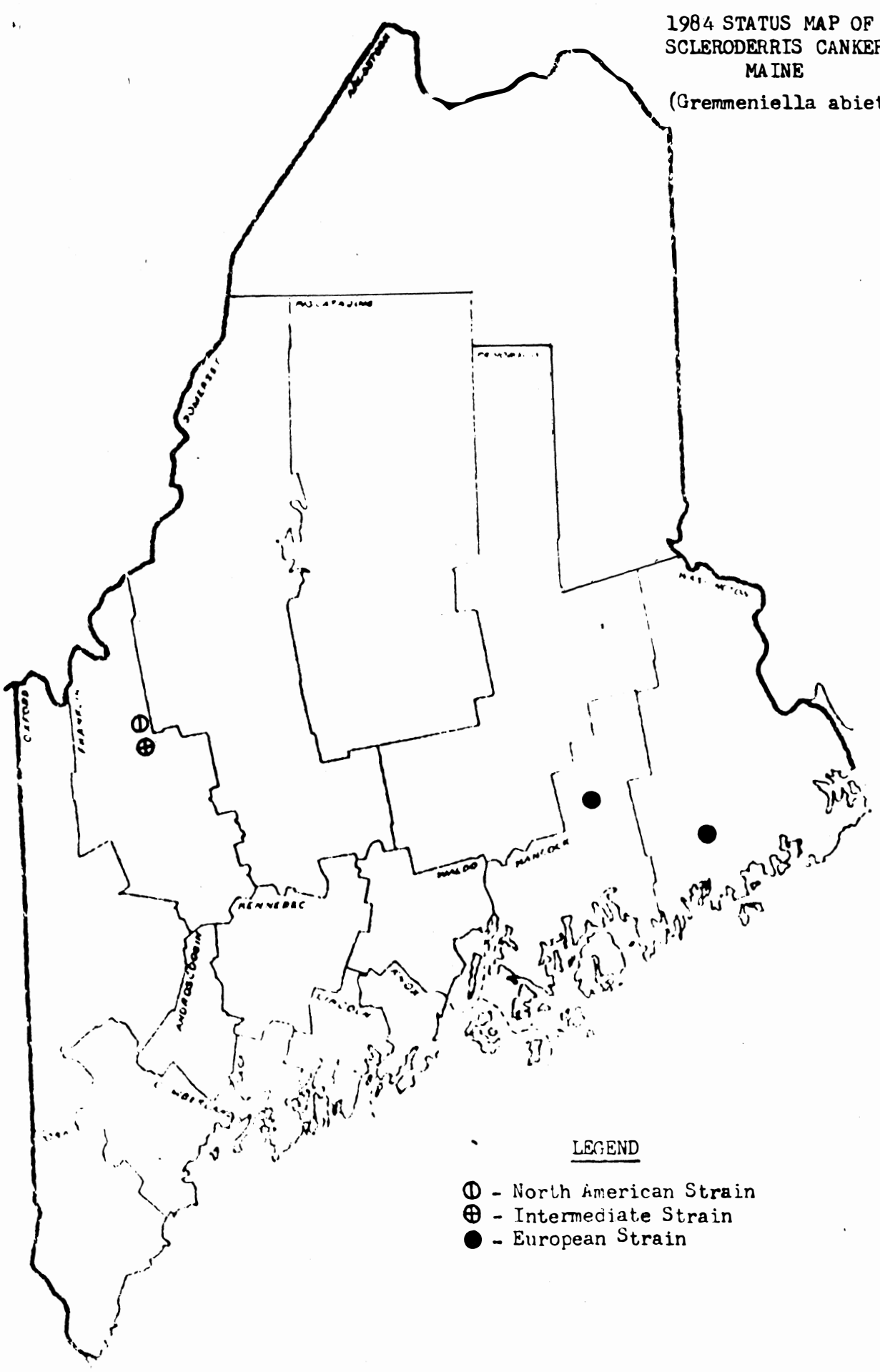
FUTURE: Although new outbreaks are always a possibility, the disease seems to have stabilized here in Maine.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Infected sites have been re-sanitized during the scouting process.

COMMENTS: Dr. Dale Bergdahl's sanitation recommendations appear to be extremely effective. Annual scouting of previously-detected infection sites and removal of "flags" appears to be not only the most effective, but also the most economical approach.

1984 STATUS MAP OF THE SCLERODERRIS CANKER IN MAINE

(Gremmeniella abietina)



LEGEND

- ⊖ - North American Strain
- ⊕ - Intermediate Strain
- ● - European Strain

1984 PEST CONDITIONS REPORT WORK SHEET (MAINE)

PEST (COMMON NAME): White Pine Blister Rust

(SPECIFIC NAME): *Cronartium ribicola*

HOST: Eastern White Pine

PRESENT CONDITION: Stabilized in Maintenance and Greenline areas.

AREA (TOTAL ACRES): 58,425 acres were scouted (mapping acreage not included).

LOCATION: Towns of Brooks (Bessey), Brewer, Clinton, Cornville, Newcastle, Waldoboro, Wiscasset, Buxton, Hollis, N. Yarmouth, Arundel, Bethel, Buckfield, Cumberland, Freeport, Hartford, Lisbon, N. Berwick, Paris.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Severe infection only in those areas of high hazard that are not on maintenance and have not been scouted.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): 150,000 bd. ft./yr. of merchantible volume (1 merchantible-sized tree/1,000 acres; 200 bd. ft./tree) plus an undetermined number of seedlings, saplings, and pole-sized trees. (Many infected but live trees which are harvested have degrade due to cankers).

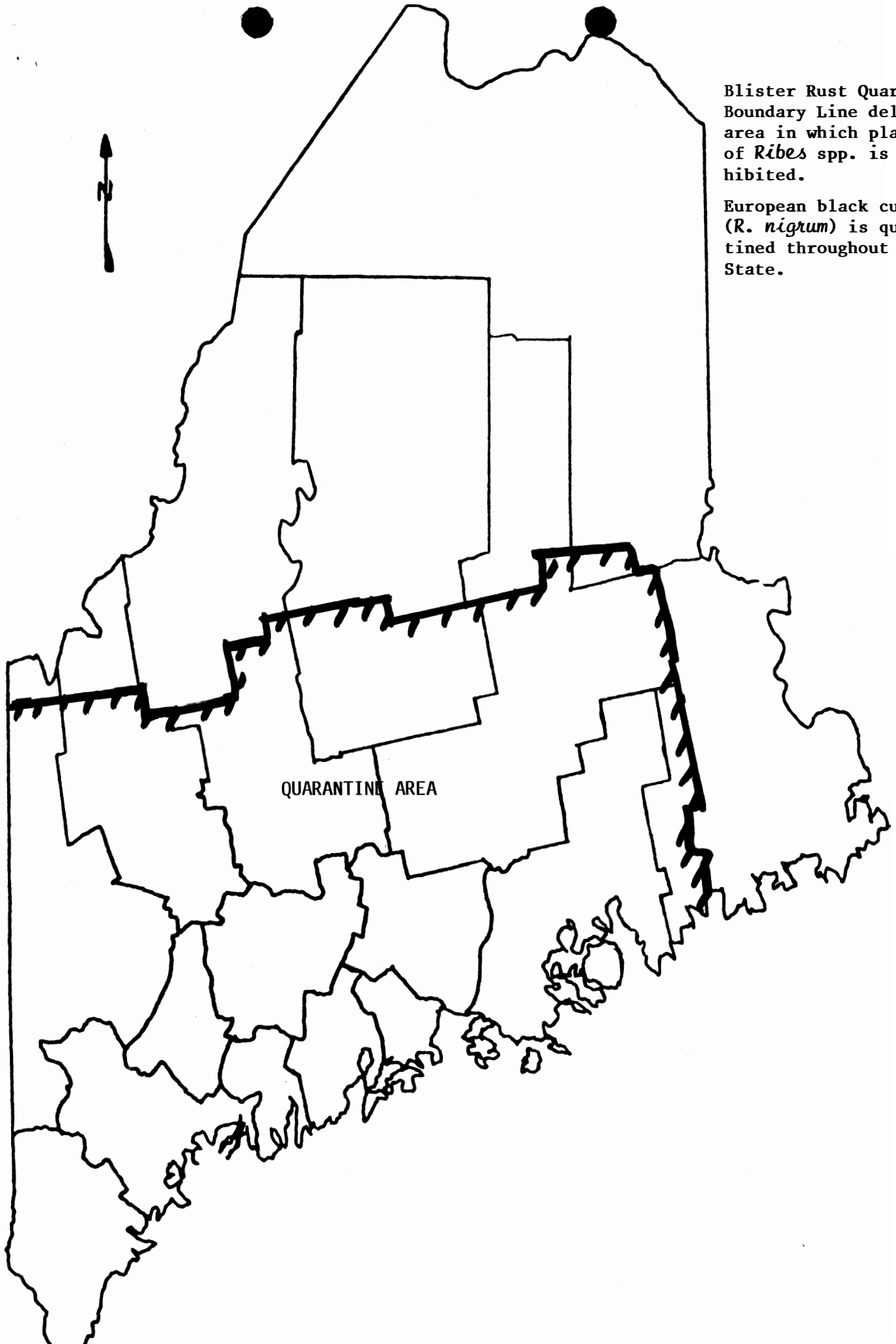
TREND: Slight increase due to expansion of rotation period.

PAST TO PRESENT: In the past, town funding enabled a 10 year rotation; current level of funding requires expansion of rotation period and thus, reduced protection of the reproduction/pole stages of regeneration.

FUTURE: With reduced funding and extended rotation, increased infection is expected, with a reduction in white pine reproduction.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): A total of 179 control acres were treated; a total of 53,649 Ribes were destroyed in this control acreage.

COMMENTS: Tordon 101-R or RTU is being used for control; however, there are still plenty of Ribes out there. some 53,649 Ribes plants were destroyed in concentrations, 18,561 Ribes were destroyed during the scouting process. Whenever these 2 hosts are in close proximity, favorable weather conditions during the pine infection period will produce heavy rates of infection.



Blister Rust Quarantin
Boundary Line delimits
area in which planting
of *Ribes* spp. is pro-
hibited.

European black currant
(*R. nigrum*) is quaran-
tined throughout the
State.

1984 PEST CONDITIONS REPORT WORK SHEET (MAINE)

PEST (COMMON NAME): European Larch Canker

(SPECIFIC NAME): *Lachnellula = Dasyscypha willkommii*

HOST: Eastern Larch (Tamarack)

PRESENT CONDITION:

AREA (TOTAL ACRES): 29 Townships

LOCATION: Coastal-Inland Washington Co.; eastern coastal Hancock Co.; coastal Lincoln and Knox Co.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Little current mortality except for reproduction/pole-size trees in an understory of mature larch. Suppressed, pole-sized trees under mature larch in Jonesboro and Friendship have also been killed. Less than 2 cords killed.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): Apparently, the disease has not been around long enough to kill mature trees. The real loss is in future stands (reproduction).

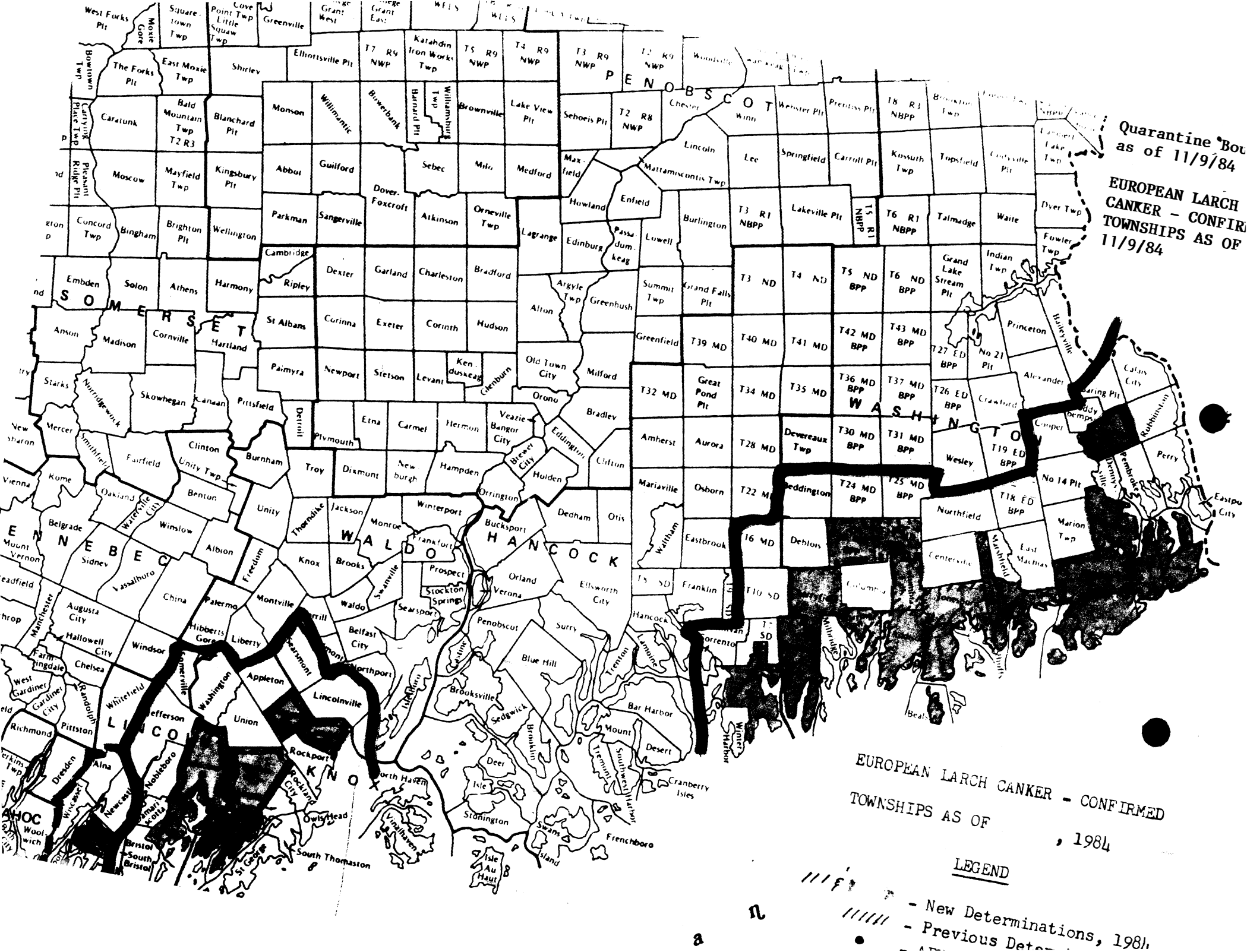
TREND:

PAST TO PRESENT: Mary Palm, APHIS Mycologist has confirmed the canker in 12 new townships since the 1983 Pest Conditions Report. Spread appears to be slow.

FUTURE: With the CIR photography available to us for 1985 survey activity, delineation of the infestation should be complete. Control strategies may be developed to stop or slow spread.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): USFS has just completed CIR photography to identify the tamarack resource in a 45 mile coastal band. MFS will interpret.

COMMENTS: This photography will allow more efficient survey activity, and appears to be useful in other FDS activities; e.g., mapping for the blister rust program and identification of plantations for Scleroderris survey.


Quarantine Bou
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- New Determinations, 1984
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WASHINGTON
WALDO
HANCOCK
KNOX
LINCOLN
ANDROSCOGGIN
KENNEBEC

1984 PEST CONDITIONS REPORT WORK SHEET (MAINE)

PEST (COMMON NAME): Ash Leaf Rust

(SPECIFIC NAME): *Puccinia sparganioides*

HOST: White and Green Ash

PRESENT CONDITION: Coastal York Co. eastward to western Hancock Co.

AREA (TOTAL ACRES): Approximately 5,000 acres.

LOCATION: Coastal, where ash and salt marsh grass occur in close proximity.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): In association with ash anthracnose, complete defoliation occurred on approximately 1,000 acres. Moderate defoliation on 2,000; the remainder light or trace.

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): We do not have an accurate handle on losses; however, we do know that substantial mortality has occurred in the most disease-prone areas. Heavy branch mortality occurring on living trees.

TREND:

PAST TO PRESENT: The cycle is roughly 10 yrs., with the last epidemic around 1970. This is the third consecutive year of heavy-severe infection.

FUTURE: Overwintering inoculum on marsh grass is plentiful. With cool, moist weather next spring, we can expect 4 consecutive years of heavy damage.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): No control being practiced; salvage is taking place at the present time.

COMMENTS: An alternate to spray recommendations for shade tree preventive treatment would be to burn marsh grass containing the overwintering inoculum. This approach would be difficult to sell to EPA or our Department of Environmental protection.

1984 PEST CONDITIONS REPORT WORK SHEET (MAINE)

PEST (COMMON NAME): Annosus Root Rot

(SPECIFIC NAME): *Heterobasidion annosum = Fomes annosus*

HOST: Red pine, white pine, Norway spruce

PRESENT CONDITION: Almost exclusively in Central and Southern Maine thinned plantations lacking stump treatment.

AREA (TOTAL ACRES): 18 townships; approximately 90 infested acres.

LOCATION: Auburn, Belfast, Dover-Foxcroft, Farmington, Lincoln, Livermore, Mechanic Falls, Newcastle, New Portland, Parsonsfield, Phillips, Sanford, Skowhegan, Standish, Wells, Windham, Raymond.

SEVERITY (INCLUDE ACRES OF MODERATE AND HEAVY DEFOLIATION OR INFECTION; DEFINE CLASSES): Approximately 90 acres of affected, moribund, or dead trees (Accumulated)

LOSSES (INCLUDE AREAS OF TREE MORTALITY; ALSO VOLUME AND/OR $ ESTIMATES): Approximately 9 acres of new (1984) mortality; approximately 200 cords.

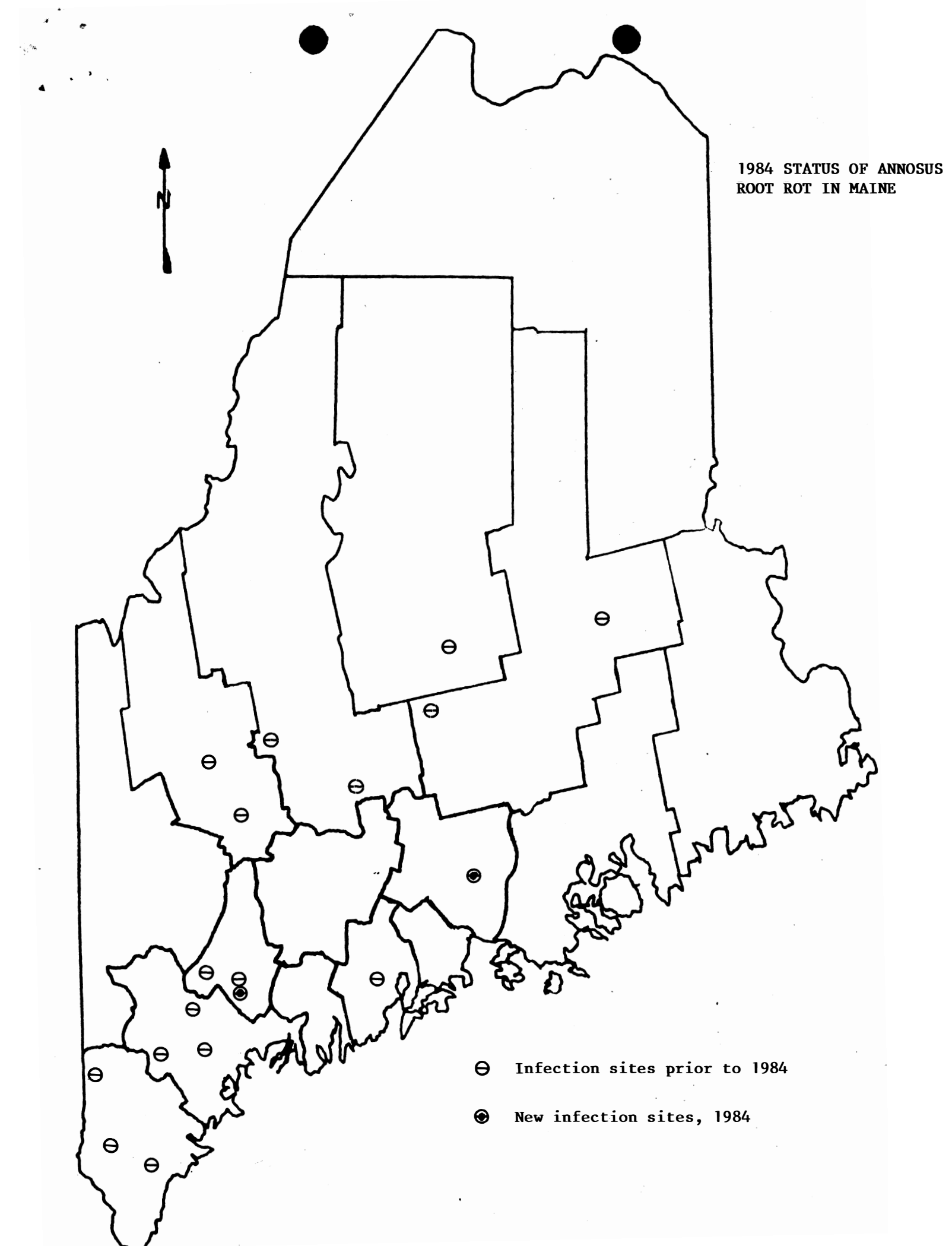
TREND: Increasing

PAST TO PRESENT: One new township added in 1984 (Belfast) to the 17 previously-infested townships. Another "hole" found in Farmington in 1984.

FUTURE: Stump treatment must be practiced starting with the 1st. Thinning. Infestations and volume losses will increase dramatically without such control.

CONTROL PROJECTS (METHOD, MATERIAL, ACRES, COST, RESULTS): Borax stump treatment @ a few cents/stump.

COMMENTS: Management for Annosus Root Rot must be viewed from the long-term point-of-view. The short-term approach; i.e., wait-and-see what happens after the first thinning without stump treatment, is not a biologically sound management option.


1984 STATUS OF ANNOSUS ROOT ROT IN MAINE
N
Infection sites prior to 1984
New infection sites, 1984

MISCELLANEOUS DISEASES

Larch Decline (Cause undetermined) - Mortality of mature tamarack continues to expand from older epicenters, and new infection sites have been detected in previously healthy stands. *Armillariella = Armillaria mellea* and the eastern larch beetle, *Dendroctonus simplex* continue to be associated with dead and declining trees. Hydraulic excavation of both healthy and dead or moribund trees revealed mycelial felts of what appeared to be *A. mellea* on roots as small as 1/4" in diameter. Wedges taken from symptomatic trees for pinewood nematode evaluation have produced sketchy results, so far; however, evaluation has been late in the season. Earlier evaluation should produce sufficient population levels to enable mounting on slides suitable for identification purposes.

Pinewood Nematode (*Bursaphelenchus xylophilus = B. lignicolus*) - Limited evaluation has produced negative results to date. All sampling has been from tamarack.

White Pine Decline (SNB) - Terminal needle reddening of current year's needles of white pine first became obvious around the end of July particularly in the Sheepscot River Valley.

Lachnellula Species Other Than Willkommii - *Lachnellula calyciformis* and *L. occidentalis* were determined by APHIS mycologist Mary Palm from tamarack samples submitted in the course of larch canker survey activity. These two species occur on dead branch material. So far at least, all Maine determinations from apothecia on live branch material have been positive for *L. willkommii*.

Yellow Witches' Broom of Fir (*Melampsorella cerastii*) - Aeciospores were being released freely from infected brooms on June 28 in a Dover-Foxcroft Christmas tree plantation. Chickweed was growing profusely at the margin of the herbicide-treated grass-free band surrounding the fir trees.

Rhabdocline Needle Cast (*Rhabdocline pseudotsugae*) - Ascospore discharge had already occurred on infected Douglas-fir on June 28 in Dover-Foxcroft. No evidence of Swiss Needle Cast, *Phaeocryptopus gaumaunii* was noted. The silver variety of Douglas-fir appears resistant to Rhabdocline infection.

Larch Branch Galls - Galls of undetermined cause are found on isolated tamarack scattered throughout the range. Galls range in size from marble to golf ball size, and may be scattered or very numerous on affected branches. Cambium over the gall appears healthy and galls appear to be due to aberrant cell division.

Actinopelte Leaf Spot (*Actinopelte dryina*) - Light to severe attack appeared on scattered red oak in the central and coastal portions of the state; especially in Kennebec and Waldo Counties. Severe attack somewhat resembled herbicide injury. A genetic differential susceptibility was noted.

Fir Needle Rust (*Pucciniastrum epilobii*) - On T5 R12, one of the most severe cases of fir needle rust was observed, and resulted when favorable weather conditions prevailed for disease development in a situation where both hosts (fir and fireweed (*Epilobium* sp.) occurred in profusion and in close proximity. On September 5, the most prevalent spore stage was the telial; however, there was still some uredial stage in evidence. Virtually all of the 1984 needle growth was killed where disease occurrence was most severe.

Tar Spot of Maple (*Rhytisma acerinum* and *R. punctatum*) - In scattered locations in Central and Southern Maine these leaf spot diseases were heavy to severe on silver and red maple, respectively. Leaf spot and anthracnose type leaf diseases have been increasing in severity for the past 3 years.

Dwarf Mistletoe (*Arceuthobium pusillum*) - Male plants were in flower on red spruce in South Bristol on March 28th. Female plants (those not displaying pollen pads at this time) could be easily detected and pruned out as a control strategy. Brooming response was moderate.

An infestation was located in Belgrade on black spruce with mature fruit present, but seeds not yet ready to be projected on September 18.

White Pine Blister Rust Aecial Production (*Cronartium ribicola*) - Release of aecia from blisters started around April 23 in Augusta, around May 7 in Madison, and May 11 in T19 MD.

Taphrina johansonii - This disease causes catkin deformation of trembling aspen. On May 15, 25% to 50% of capsules were affected in the Augusta area.

Sweet-fern Blister Rust (*Cronartium comptoniae*) - Approximately 50 acres of 4-6' high lodgepole pine in T35 MD and T37 MD were lightly to severely affected with typical swollen, elongate stem and branch cankers, especially in the lower foot of crown and stem. Planting of this tree species without consideration of this disease problem can produce results similar to those observed on these sites. Long telial horns of the fungus were observed on adjacent sweet-fern (Nov. 2). Lodgepole pine evidently is quite susceptible to white pine weevil injury as well.